

THE U.S. DEPARTMENT OF ENERGY
MARSHALL ISLANDS MEDICAL PROGRAM
FISCAL YEAR 2000 REPORT
January 17, 2001

The Department of Energy (DOE) Marshall Islands Medical Program continued, in this its 46th year, to provide medical surveillance for the radiation-exposed populations of Rongelap and Utrik Atolls. The Program was implemented in 1954 by the Atomic Energy Commission following the accidental exposure of Marshallese to fallout from a nuclear test at Bikini Atoll. This report provides a summary of the special medical care program conducted on behalf of the DOE patient population during the past year.

Department of Energy (DOE)/Pacific Health Research
Institute (PHRI) Cooperative Agreement
#DE-FC03-98EH98035/A000

DOE/PHRI Special Medical Care Program in the
Republic of the Marshall Islands (RMI)

**Annual Program Progress Report under
DOE/PHRI Cooperative Agreement:
(July 15, 1999 - July 14, 2000)**

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Executive Summary

Mandate for the Report - Public Law 99-658 (November 1986) on implementation of the Compact of Free Association Act of 1985 requires that DOE provide the Committees on Appropriations of the House and Senate an annual report in December of each year on the radiological health care and logistic support program for the remaining members of the population of Rongelap and Utrik who were exposed to radiation resulting from the March 1, 1954, U.S. thermonuclear Bravo test.

Report Timing – This fiscal year (FY) 2000 report was prepared after the end of this year's PHRI Budget (July 15, 1999 - July 14, 2000), and includes a review of the innovative approaches being used to provide special medical care to the mandated Rongelap and Utrik population.

Brief Summary of Report - The DOE/PHRI Special Medical Care Program in RMI commenced its health care coverage for the mandated Rongelap and Utrik populations on January 15, 1999, on Kwajalein and on January 22, 1999, on Majuro. The program provides year-round, onsite medical care to the mandated population living in the RMI and annual examinations to those patients living in Hawaii and on the continental United States.

The process of health care delivery that is utilized includes direct patient care, patient education, and onsite training of the Marshall Islands health care providers. Emphasis is also placed on cooperating with the RMI Ministry of Health and Environment (MOHE) and the 177 Health Care Program as much as possible to positively affect the overall health of the DOE patient population, as well as the larger RMI population as a whole.

Currently, there are 123 exposed Rongelap and Utrik patients and 95 of the DOE additional patients being cared for by the program. Four (4) patients passed away and 18 patients required referrals to the tertiary care facility, Straub Clinic & Hospital, Inc., in Honolulu, Hawaii, in this year.

A nutrition education intervention program, as well as nutrition consultations, was conducted to counsel patients on good nutrition and eating habits. The community advisory groups have been established to help identify the needs of the community relative to the program, which we hope will improve the program's ability to meet the community's needs within the bounds of the congressional mandate. Community meetings continue for all the patient population. Continuing medical education programs have been implemented that are assisting in the growth and improvement of the local health care system in the Marshall Islands.

This annual program progress report summarizes the delivery of the special medical care to the Marshall Islands DOE patient population of Rongelap and Utrik as conducted under the DOE/PHRI Cooperative Agreement #DE-FC03-98EH98035/A000.¹

¹ The Principal Investigators for the DOE Special Medical Care Program are Neal A. Palafox, M.D, M.P.H., and Henry N. Preston, M.D. The Program Coordinator is Ms. Lola M. Colombe.

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**Annual Program Progress Report under
Department of Energy (DOE)/Pacific Health
Research Institute (PHRI) Cooperative Agreement
#DE-FC03-98EH98035/A000**

Title of the Project: Deliver Special Medical Care to the Marshall Islands for the
P.L. 99-239 DOE Patient Population of Rongelap and Utrik

Principal Investigators: Neal A. Palafox, M.D., M.P.H.
Henry N. Preston, M.D.

Program Coordinator: Lola M. Colombe

Period Covered in this Report: July 15, 1999 -July 14, 2000

I. Introduction

The DOE Marshall Islands Medical Program continued, in this its 46th year, to provide medical surveillance for the exposed population from Rongelap and Utrik and the additional DOE patients.² The program was inaugurated in 1954 by the Atomic Energy Commission following the exposure of Marshallese to fallout from a nuclear test (Castle Bravo) at Bikini Atoll. This year marks the second year in which the program has been carried out by PHRI under a cooperative agreement with DOE.

The DOE/PHRI Special Medical Care Program, awarded the cooperative agreement on August 28, 1998, commenced its health care program on January 15, 1999, on Kwajalein and January 22, 1999, on Majuro. This report details the program for the July 15, 1999, through the July 14, 2000, period.

The program provides year-round, onsite medical care to the DOE patient population residing in the Republic of the Marshall Islands (RMI) and annual examinations to those patients living in Hawaii and on the continental United States.

² DOE patient population refers to the combination of “exposed patients” and additional DOE patients, formerly known as “control or comparison” population (Marshallese individuals, not present on Rongelap or Utrik at the time of the 1954 thermonuclear “Bravo” test, but who roughly match the age and gender of the exposed population identified in section 103(h)(1) of the Compact of Free Association Act).

II. Major Accomplishments this Year

- Contacted 217 of the 218 DOE patients and offered them program care (1 patient's whereabouts have been unknown since 1976).
- Saw 216 of the above 217 patients with 1 scheduled for a clinic visit in August.
- Contacted 100 percent of those patients living outside of RMI (16 in Hawaii and 14 on the continental United States) for completion of their annual examinations in Hawaii.
- Completed 156 annual examinations with the remainder needing to complete a few required tests.
- Refined the annual exam schedule in order to have a continuous flow of patients throughout the year. A monthly list of patients who need to be seen for their annual exam is provided to each clinic. In addition, letters are sent out monthly reminding each patient that it is time for their annual exam and asking them to contact the clinic for an appointment.
- Medical staff members made visits to Mejjatto and Utrik to provide care (see exhibit 3).
- Maintained continuity of care at the Majuro Clinic with Dr. Zacharias Zacharias filling the medical officer (MO) position that was vacant due to Dr. Lanwi's departure for continued training in Fiji.
- Provided thyroid specialist care for patients and training for the medical officers through Dr. Leonard Kryston. Dr. Kryston agreed to provide these services on an ongoing basis. He is an endocrinologist who also provided much needed care and expertise on diabetes.
- Trained Dr. Zacharias to perform flexible sigmoidoscopies.
- Established the Community Advisory Groups, whose members were selected by a patient vote on Ebeye, Majuro, Mejjatto, and Utrik.
- Provided cross-cultural training to DOE and PHRI program staff to raise their level of understanding on Marshallese culture and customs.
- Hired a computer systems analyst in February.
- Reviewed electronic medical records systems and narrowed the selection to two systems, final selection awaiting MO's review.
- Constructed a program website with security measures in draft form for input.

- Developed and pilot tested a plan for taking the past medical records received from DOE and integrating those into the DOE/PHRI program's electronic medical record (EMR) system.
- Researched measures to establish a security plan for the EMR system that meets the American Medical Association, as well as State and Federal rules and regulations.
- Implemented a household nutrition intervention program on Majuro and Utrik (55 households were visited). The program was well received and plans are to expand the program to Ebeye and Mejatto next year.
- Continued nutrition counseling by Laurence Carucci and Mary Maifeld and began video production for ongoing nutrition education utilizing the clinic videocassette recorder (VCR).
- Continued to provide continuing medical education (CME) to RMI staff via web and e-mail.
- Provided additional medical care to 1,921 individuals (non-DOE patients) in RMI.

III. Health Status of Population

Participation in this medical program is strictly voluntary. Currently, there are 213 of the exposed population and 95 of the additional DOE patients being cared for by the program. All but two patients have been seen by the program's physicians. DOE patient encounters total 1,017 visits for the year.³ Four (4) patients passed away during this year and 18 patients have required referrals to the tertiary care facility, Straub Clinic & Hospital, Inc., in Honolulu, Hawaii (exhibit 1). The program made a concerted effort to contact each patient in the DOE patient population in order to complete their annual examination. One hundred forty-six (146) annual examinations have been completed during this year.⁴

In order to keep the patients healthy and to act as a complement to Dr. Carucci and Ms. Maifeld's work, which involves yearly trips to RMI to see the patient population, discussions took place in September 1999 with Dr. Joel Gittelsohn and Ms. Heather Haberle of Johns Hopkins University on a household, nutrition education intervention program for the DOE patient population. This program is aimed at promoting good nutrition and its consequences in the DOE/PHRI Special Medical Care Program population in RMI. The intervention took a series of existing nutrition education modules and modified them as needed

³ Encounters include patient visits for medication refills, annual examinations, lab tests, procedures, periodic checkups and sick visits.

⁴ Not included in the 146 examinations completed are 10 patients who did not come in for annual exams despite repeated attempts to ask them to come in. Also 21 of the 146 represent patients who completed their physical exam but refused other portions of the annual exam; i.e., pap, flexible sigmoidoscopy, or mammogram. This number represents both first time as well as second time annual exams conducted under the program.

to meet the specific needs of the program's population. It was implemented on Majuro and Utrik in May and plans to implement the same on Ebeye and Mejatto have begun (for more details see section VIII. 2).

IV. Program Administration and Physicians

The DOE/PHRI Special Medical Care Program's staff, based in Honolulu, Hawaii, includes one principal investigator (PI), one co-PI, three co-investigators, one program coordinator, one computer systems analyst, one statistician/evaluator, and one program assistant. The staff in RMI consists of two medical officers and two nurse coordinators (one set each on Majuro and Kwajalein). Other program staff includes various residents and faculty members of the University of Hawaii, John A. Bums School of Medicine, Department of Family Practice Residency Program (UHJABSOM DFPRP) (exhibit 2).

In order to provide continuity of care to the DOE patient population and clinic oversight for the RMI staff, the administrative staff and physicians based in Hawaii have visited RMI on 16 different occasions from July 15, 1999, through July 14, 2000. These visits include:

- Five visits by Dr. Neal A. Palafox, Principal Investigator: July 1999, October 1999, December 1999, January 2000, and June 2000;
- Two visits by Dr. Henry N. Preston, Co-Principal Investigator: October 1999 and April 2000;
- Five visits by Dr. Wilfred Alik, Co-Investigator: July 1999, September 1999, November 1999, March 2000, and June 2000;
- One visit by Dr. Jill Minami, Co-Investigator: January 2000;
- Two visits by Lola Colombe, Program Coordinator: August 1999 and February 2000; and
- One visit by Vicki Shambaugh, Co-Investigator: February 2000.

Drs. Palafox, Preston, and Alik, the program's core faculty, covered two-thirds of the faculty rotations to RMI this year to provide continuity of care and direct involvement in the clinic operations. Also, of particular note, during this year, one of the residents, Dr. Sheldon Riklon, M.D., the second U.S. trained Marshallese physician (after Wilfred Alik, M.D., who is a co-investigator), rotated to RMI three times. Upon graduation, he plans to return to the Marshall Islands to practice medicine on a full-time basis. Furthermore, Dr. Momi Ka'anoi chose to rotate to RMI two times as a resident and once as a faculty member, for a total of three rotations. Three faculty members have also chosen to repeat their rotations. These repeat rotations by the faculty and residents help the program provide continuity of care for the DOE patient population.

Bechtel Nevada Corporation (BN) (under DOE contract) continues to provide the logistical support to the medical program. Logistical support involves all transport, housing, and accommodation arrangements for staff and patients traveling between RMI and Honolulu, Hawaii, or beyond. BN has been instrumental in providing PHRI with the necessary

infrastructure; i.e., trailers, vehicles, and travel support, for the program to operate. Furthermore, BN is also involved in providing the program's patients with logistical support for tertiary care, when deemed necessary, via a subcontract with Straub Clinic & Hospital, Inc.

V. Program Activities

The DOE/PHRI Special Medical Care Program, created for the benefit of the DOE patient population, provides year-round, onsite medical care to DOE patients residing in RMI and annual examinations to those DOE patients living in Hawaii and on the continental United States. During this year, the program provided the following medical and health-related services:

- Provided annual medical examinations (exhibit 1);
- Provided preventive health care; i.e., nutrition counseling and nutrition education intervention;
- Provided additional medical care personnel for the outpatient clinics on Ebeye and Majuro;
- Made home visits to patients who are physically unable to visit the clinic;
- Coordinated with Kwajalein Hospital for ancillary services, such as laboratories, radiology, and pharmacy;
- Made periodic trips to Mejjatto and Utrik (exhibit 3) to see patients residing on those atolls;
- Coordinated with other health care programs and facilities in RMI, such as the RMI MOHE; 177 HCP; and Ebeye, Majuro, and Kwajalein hospitals; i.e., diabetes project on Ebeye;
- Coordinated a visit by an endocrinologist to the Majuro and Kwajalein clinics (1 week at each site);
- Conducted a training and quality assurance visit by the flexible sigmoidoscopy trainer to the Majuro and Kwajalein clinics;
- Made referrals to Ebeye, Majuro, and Kwajalein hospitals, and Straub Clinic & Hospital, Inc., when necessary;
- Provided continuing medical education (CME) for program staff and RMI health care workers (exhibit 4); and
- Coordinated with high schools and the College of the Marshall Islands to develop a curriculum and to deliver lectures on health-related topics.

In addition to the above, the program was also involved in the following activities:

- Conducted community meetings;
- Established community advisory groups;
- Conducted a 1-day cultural sensitivity training program;
- Developed a draft of the program's website;
- Reviewed various vendors of electronic medical records;
- Coordinated and implemented the quality assurance program with regards to a formal medical record audit and a patient satisfaction survey;
- Hired a new MO for the clinic on Majuro;
- Finalized this year's Operating Plan between DOE and PHRI;

- Met with DOE and BN to develop an Operating Plan of the program for this year;
- Finalized the subcontract with the University of Hawaii;
- Met and had discussions with RMI community leaders in the RMI;
- Hired a computer systems analyst;
- Hired a program assistant; and
- Participated in numerous discussions with DOE and PHRI attorneys, as well as program staff regarding the tobacco subpoena.

VI. Clinics

Two clinics were established for the program in January 1999, one on Kwajalein and the second on Majuro.⁵ Each of the program's clinics is currently staffed with one full-time medical officer and one half-time nurse coordinator, all of whom are Marshallese-speaking and sensitive towards the culture in the Marshall Islands. In addition to the clinics on Kwajalein and Majuro, the resident and faculty physicians also continue to see DOE patients in the outpatient/specialty clinics in Majuro and Ebeye approximately 2-3 half days per week and other non-DOE patients as time and resources permit (see exhibit 1).

Since the commencement of the program, UHJABSOM faculty physicians have been rotating to the Marshall Islands for a 2-week duration each month. In addition, residents with the UHJABSOM DFPRP have been rotating to the Marshall Islands for a 1-month duration. Both rotations will further assist with health care delivery and capacity building in the Marshall Islands. While this 1-month assignment to RMI may be difficult, the majority has felt it to be a very good learning experience. In fact, a number of residents and faculty have opted to do repeat rotations. In August 1999, the Ministry of Health called a strike, which led to the shutdown of all medical services in Majuro, Ebeye, and the outer islands. Since all of the program's RMI staff are employed by the Ministry of Health and Education (MOHE), we hoped that they could continue to see DOE patients as usual, but realized that this was difficult given the circumstances. We managed, however, to keep the program's clinics open and staffed as usual.

The annual examination schedule for the two clinics, which detailed what each of the program's patients needed in order to complete their annual exam, was reviewed and modified several times during the year. Initially, each clinic was given a listing of patients (approximately 90 each) who resided in their area of responsibility; i.e., Ailinglaplap, Mejatto, Ebeye, Lib, Ujae for the Kwajalein Clinic and Ailuk, Mili, Ebon, Enewetak, Jaluit, Mejit, Wotje, Utrik, and Majuro for the Majuro Clinic. As copies of the medical records were received in Honolulu by the program coordinator and eventually the program assistant, those parts of the exam that were

⁵ Encounters may vary depending on whether the medical officers are on vacation, out of the office due to illnesses, on professional leave, on *Mejatto/Utrik* trips, conducting specialty clinics, or whether Marshallese-speaking residents and faculty are present.

completed were logged accordingly. Then, on a quarterly basis, the listing was sent back to the clinics so that the clinics could see who was complete and incomplete. As there was still some difficulty with getting these exams completed, the program then switched from a quarterly system to a monthly system of reporting back to the clinics. Also, a checklist was developed that would be put into the patients' medical record in order to make it easier for the physicians and staff at the clinics to see what portion was complete and what was still outstanding. This system was again modified during the last quarter, such that currently each clinic is provided with a list of patients to bring in for the month for completion of their annual exam. And, at the end of each month, the program coordinator will provide feedback to the clinics.

We are continuing to look at potential barriers to care and ways to encourage more patient visits to the DOE/PHRI clinics located on Kwajalein and Majuro. While more patients are making repeat visits to the clinic for ongoing care, as they become more accustomed to clinic personnel and operations, some of the patients have voiced concern over the cost of transportation to the clinics. By coordinating with BN, patients who need to come in for an annual examination are either picked up by Bechtel personnel or reimbursed for taxi fare.

1. Kwajalein Operations

The Kwajalein Clinic, located in a trailer behind Kwajalein Hospital, is staffed with one medical officer, Dr. Tom Jack, and one nurse coordinator, Bonnita Paul Patrick. The clinic is open from 1-3 p.m., Tuesday through Saturday, to see the DOE patient population, but is staffed until 4:30 p.m. Between 3-4:30 p.m., the staff work on completing and copying chart notes, filing and copying lab reports, making appointments for ancillary services at Kwajalein Hospital, and writing/completing the necessary reports. Often, the medical officer, who lives on Kwajalein, will work at the clinic before making rounds on Ebeye, in order to coordinate with the program coordinator in Honolulu, Hawaii.

During the third quarter, the program was faced with the inability to have mammograms completed due to the absence of a certified radiology technician at Kwajalein Hospital. This problem was resolved during the fourth quarter and mammograms, as well as thyroid ultrasounds, are being conducted at Kwajalein Hospital.

The possibility of the clinic moving to Ebeye, once the new Ebeye Hospital is completed, was raised during the third quarter of operations, and the following concerns were raised:

- The need to have 24-hour electricity, water, and sewer service guaranteed;
- The cost for electricity, water, and sewer service;
- Housing requirements for PHRI faculty, residents, and TDY staff on Ebeye;
- Possible housing requirements for the medical officer;
- The need for transportation/vehicle on Ebeye for PHRI physicians and staff;
- The handling of supplies/cargo from Kwajalein;
- Configuration of clinic space; i.e., trailer beside hospital like Majuro or rent space inside

- hospital; and
- Status/need for the trailer on Kwajalein.

All of the above issues will need to be resolved before the move takes place and discussions among the DOE/PHRI administrative staff, Ebeye Hospital, the MOHE, DOE, and BN will be ongoing.

2. Majuro Operations

During the early part of this year, the Majuro Clinic moved from a wing of Majuro Hospital to a trailer behind Majuro Hospital. The clinic is open from 10 a.m.-12 p.m., Monday through Friday, to see the DOE patient population. The office is staffed from 9 a.m. so that administrative work can be completed; i.e., copying chart notes, filing and copying lab reports, making appointments for ancillary services at Majuro or Kwajalein hospitals, and writing/completing the necessary reports.

A new medical officer had to be hired this year since the program's prior MO was accepted to the Fiji School of Medicine for further medical training in the field of Family Practice (a 2-year course of study). Dr. Zachraias was secured in February. He is very enthusiastic about working with the program and has been well received by the patients.

The Utrik airport was closed for approximately 1 month in the third quarter due to damage to the runway. This impacted the program's ability to visit the patient population residing on the island and the patients' ability to be flown out to complete their annual examinations.

3. Hawaii Operations

For those patients who reside on the mainland United States, the program sent out letters inviting them to Hawaii in order to conduct their annual examinations. The letters were translated into Marshallese and explained what services would be provided. The program and Bechtel coordinated efforts to contact the patients and bring them to Hawaii. All of the patients contacted have either completed their exam or been scheduled to be seen by the end of August 2000. Thus far, 13 patients visited Hawaii for annual exams.

Initially, we had hoped to have the patients' designated primary care physicians at their home location perform the annual exam and we would reimburse them for it. On the surface, this appeared to be a more efficient and economical solution, as well as potentially reinforce ongoing medical care at the participant's home location. However, upon further investigation, we found that this would involve developing and negotiating several contracts with hospitals/medical centers around the country for services, tracking these services to make sure only the necessary tests were done, processing bills, and making payment on the services provided. Most patients did not have a primary care physician and this would then involve finding one for them in their area that was willing to perform the exam. A decision was thus

made that the time and effort necessary to do this properly would greatly outweigh the cost and efficiency of conducting the annual exams here in Honolulu.

For those patients who reside in Hawaii, we continue to see them at the Physicians Center in Mililani or at the Straub Clinic & Hospital for their annual examinations.

VII. Specialists

1. Endocrinologist

In June 2000, Dr. Kryston, an endocrinologist from the Straub Clinic & Hospital, spent 1 week at each clinic in RMI. He saw 35 patients (3 1 DOE patients and 4 non-DOE patients), conducted thyroid palpations, took biopsies as needed, presented a CME talk, conducted thyroid ultrasounds, conducted tine needle aspirations, provided consultations for 4 non-DOE patients from Ebeye, and provided the expertise to make sure the MO's had the proper and appropriate technique for thyroid palpations. Dr. Kryston also looked at the equipment available at the clinics to see if it was appropriate and whether or not other equipment needed to be purchased. He has also taken on the task of updating the thyroid protocol for the program's policy and procedures manual and evaluating the need for yearly thyroid ultrasounds.

2. Nutritionists

For the second year, Dr. Carucci, a cultural anthropologist, and Ms. Maifeld, M.A., R.D., a nutritionist, flew to the Marshall Islands in July 2000, for a period of 1 month. Dr. Carucci and Ms. Maifeld are a husband and wife team that has extensive experience with nutrition in RMI. Dr. Carucci is fluent in Marshallese (both verbal and written) and both have lived in Enewetak and Ujelang for several years. They have worked intermittently in RMI since 1980.

During this trip, the Maifeld/Carucci team will begin taping segments for two nutrition videos in Marshallese. One video will concentrate on lifelong patterns of eating and exercise, incorporating scenes of daily life, food preparation, and exercise to improve the well-being of the DOE patient population; and the other will concentrate on special diets for diabetics and heart disease, incorporating scenes of food preparations appropriate for the patients with these types of problems. The videos will provide the patients with an opportunity to see themselves as real participants in the nutrition program and have a constant reminder of how important good nutrition can be and how it can be maintained, even when the nutritionists are not physically on site. At both clinics, we have a television/VCR setup that would enable the patients to view the videos as needed or while they are waiting for their appointment.

3. Flexible Sigmoidoscopy Trainer

In March 2000, one flexible sigmoidoscopy trainer, Ted Tokumine, went to both Majuro and Kwajalein in order to train the new MO in Majuro in the proper use of the flexible

sigmoidoscopes that we have purchased for each site and to conduct quality assurance in Kwajalein.

VIII. Thyroid Examinations

Thyroid palpations, to date, have been conducted by an endocrinologist, the program's faculty, MO's, and residents with the faculty physicians providing the necessary supervision on the proper and appropriate technique.

The program had been unable to complete thyroid ultrasounds at the Kwajalein Hospital since last year as we had originally intended. However, this problem was solved at the end of March when the Kwajalein Hospital purchased a new ultrasound machine with better resolution.

IX. Other Health Services

One of the goals of the program's extended efforts, as time and resources allow, is to assist the local communities in strengthening their health care system. It would be fruitless to develop programs that the community felt were unimportant and which would be unsustainable once the DOE program ends; i.e., the Nutrition Education Intervention Program is one such program that is targeted to the DOE patient population, but also beneficial to the patient's whole family. Thus, the DOE/PHRI Special Medical Care Program has made concerted efforts to involve the community in these programs. The program has also made great efforts to improve the education and training of the local physicians by attending daily hospital rounds and by providing bimonthly CME talks for the hospital staff. The rounds and CME lectures allow the health care providers in the Marshall Islands to keep abreast of new advances in medicine. Faculty and residents also assist at the outpatient clinics at Ebeye and Majuro Hospital at least twice per week during their rotations and take call with the MO's at least once per week. The program's involvement also provides the local health community; i.e., the public health sector, with much needed extra manpower and the benefits of being attached to an academic institution, which usually brings with it a higher standard for practicing evidence-based, patient-centered medicine.

1. Continuing Medical Education

In order to further the education of the RMI program staff, the program has continued to provide them with medical textbooks, medical journals, on-line referencing capabilities, and safety training videos. The program also continues to provide the RMI staff and collaborating physicians at Kwajalein and Ebeye Hospitals, medical updates and resources via e-mail and the web.

In addition, the program's PI's, faculty, and residents continue to make CME presentations each time they have visited the Marshall Islands (exhibit 4). These presentations are given not only to the RMI physicians and staff, but also to other interested healthcare workers in the RMI. They were held at the Kwajalein Hospital, Ebeye Hospital, and Majuro Hospital and were well received.

Also, when possible, the RMI staff is given the opportunity to attend lectures and seminars on special interest topics that relate to the program. In March 2000, Dr. Jack, MO (Kwajalein), and Dr. Zachraias, MO (Majuro), came to Honolulu to attend a family practice conference.

Before the conference, the two MO's met with the computer systems analyst and the statistician/evaluator to discuss the program's website. They viewed websites of other organizations and brainstormed ideas about what they felt should be on the DOE/PHRI site. Chris Welsh, the PHRI's computer systems analyst, and David Johnson, Ph.D., also prepared a live demonstration of an EMR system we may use for the program. Both of the MO's felt the EMR would improve the program tremendously with regards to tracking patient problems and record keeping, and were very enthusiastic about getting started. They provided feedback on the various components of the system.

The MO's also met with Dr. Kryston (endocrinologist) to discuss hyperthyroidism, hypothyroidism, thyroid cancer detection, and treatment. They found this one-on-one talk with Dr. Kryston to be very educational. This 1-hour talk was followed by 1 hour of clinic visits with thyroid patients and 45 minutes of active discussions with a thyroid ultrasound technician and a radiologist at the Straub Clinic & Hospital, which included actual viewing of a thyroid ultrasound being taken and read. In addition to the clinic visits conducted at the Straub Clinic & Hospital, one morning was spent seeing patients at the Kaiser Clinic with Dr. Alik.

Through mentoring and teaching provided by the program's investigators and other UHJABSOM faculty during their rotation to the Marshall Islands and the medical updates via the Internet, seminars, and conferences, the program hopes to increase the clinical acumen of the medical officers and nurse coordinators.

2. Household Nutrition Intervention Program

This intervention program is aimed at promoting good nutrition and its consequences in the DOE/PHRI patient population in RMI. It took a series of existing nutrition education modules, and modified them as needed, to meet the specific needs of the DOE patient population. In September 1999, consultants, Dr. Carucci and Ms. Maifeld, met with Dr. Gittelsohn and Ms. Haberle of Johns Hopkins University, to develop, implement, and evaluate a culturally appropriate household nutrition education intervention program. In the last week of January, Ms. Haberle, the interventionist for the household nutrition education intervention, met with the Majuro clinic staff and the Utrik mayor to let them know the intervention program would be delayed for 2 months due to personal obligations relating to the RMI tobacco suit. In March, Ms. Haberle resumed her work with the DOE/PHRI program, identified the data collector for the nutrition education intervention, and set up a meeting with the clinic staff to discuss enrollment of the patient population.

The first phase of the program began in April 2000 when the interventionists began to visit the DOE patients' households. The families visited thus far appear to be pleased with the nutrition

intervention program and have commented on the benefits of the “live” cooking demonstrations and home visits. Next year the program hopes to extend the intervention to those patients living on Ebeye and Mejjatto (see exhibit 5 for a detailed report).

3. Public Health Sector

In addition to caring for the DOE patient population, the DOE/PHRI Special Medical Care Program has also been working to contribute to the overall health system in RMI. The program’s efforts to make a greater impact began with the DOE patient population. The program has extended the scope of service beyond caring and screening for radiogenic illnesses to include primary care for the DOE patients residing in the Marshall Islands. The MO’s and doctors at the two clinics care for acute and chronic illnesses in the DOE patients residing in the Marshall Islands, as time and resources permit, in addition to addressing their health care maintenance needs as recommended by U.S. preventive health task force guidelines. The program is also integrating nutrition education into its services, which utilize native foods and customs as a part of this teaching.

Given the limited number of patients, the clinic is only open for half of each day. The family practice residents and faculty, as well as the MO’s, spend the remainder of the time in the outpatient clinics at the Ebeye and Majuro Hospitals. The residents and faculty also work with various public health projects. The doctors see an average of 10-12 patients per half day working in various outpatient clinics, which include general medicine, prenatal, sexually transmitted diseases (STD), diabetes, and pediatric clinics.

Program doctors have been assisting the public health nurses with their home visits for tuberculosis, malnourished, and Hansen’s Disease patients, as well as seeing patients in the immunization clinics. They have also been giving mini-lectures to the high schools and general community of Majuro and Ebeye on various health topics. The residents and faculty, in conjunction with the local physicians on Ebeye, have designed a diabetes database to track the Ebeye residents with diabetes. This database will enable the physicians to more efficiently keep track of the health care needs of these patients and to monitor the key indicators of their health. The database will also assist the Ministry of Health in collecting more accurate statistics on the health of the population and could serve as a model for other health care databases. The data collection has begun on Ebeye and involves looking through medical records at Ebeye Hospital and abstracting pertinent data from the charts. This data, once compiled, will be matched with data already available through the diabetes clinics and diabetes outreach programs. The ultimate goal of this project is to bring the various parts of diabetes care together in a joint effort on Ebeye in order to provide better care for the patients with diabetes. In addition to the database, the residents and faculty will be involved in diabetic focus groups set to start in the fall on Ebeye to determine the specific needs of the population there.

On Majuro, the residents and faculty have been working mainly with the public health nurses in the areas of STD prevention/treatment, nutrition, and immunizations. Several of them have

participated in home visits to assess the patient’s nutritional status and to deliver food, take measurements, and deliver medications. Others have participated in improving patient education materials and in developing better ways to deliver education to the community. Dr. Riklon has been very active in getting a premedical society started for local high school students interested in health careers. He has been meeting with the scholarship committees and with the school counselors to coordinate this project and plans to involve the other residents and faculty in this endeavor.

X. Community Relations

The involvement of the DOE patient community, as well as their community leaders; i.e., Council members, mayors and senators, is an integral part of the program. Without the input of the DOE patient population, the program administration would not be able to identify the needs of the community relative to the program and meet the community’s needs within the bounds of the congressional mandate. It is with this in mind that the program has established the Community Advisory Group, whose members will have an opportunity to voice their concerns regarding health-related issues, to offer program input, and to learn more about the program in general. However, it is also important to keep abreast of the larger political, economic, and social issues in the RMI; and, hence, meetings with the Government leaders (both RMI and U.S.), healthcare professionals, etc., are also necessary. Through working together, we hope to make a better program.

1. Community Advisory Groups

The Community Advisory Group representatives for Ebeye, Majuro, Mejjatto, and Utrik have been elected and the elected members are as follows:

The Rongelap Representatives:

- | | | |
|---------------------------|---------------------------|---------------------------|
| Ebeye: 1. Lijohn Eknilang | Majuro: 1. Billiet Edmond | Mejjatto: 1. Kolle Edmond |
| 2. Enos Samson | 2. Isao Eknilang | 2. Alet Edmond |
| 3. Jojiline Hitchfield | 3. Katner Tima | 3. Kobang Anj ain |
| 4. Julian Riklon | 4. Betty Edmond | 4. Bolkain Anjain |

The Utrik Representatives:

- | | | |
|------------------------|---------------------------|------------------------|
| Ebeye: 1. Royal Katuon | Majuro: 1. Donald Matthew | Utrik: 1. Margaret Aen |
| 2. Thomas Torren Laik | 2. Ronald Matthew | 2. Harris Joel |
| 3. Ruthann Matthew | 3. Joannes Peter | 3. Winton Joel |
| 4. Mary Samson | 4. Tarbwij Charley | 4. Kioto Joel |

2. Community Meetings

The program continues to hold community meetings for the DOE patient population to discuss issues and inform the population of the program's activities. A number of community meetings were held during the past year and are detailed below:

Community meetings took place in Majuro in October 1999, January 2000, and June 2000. It was during the January meeting that the Community Advisory Group representatives were chosen. During the June 2000 meeting, Dr. Palafox delivered the program's last year annual report, translated copies of which were distributed to the RMI community leaders. The Majuro community meeting was well attended on all occasions and some of the concerns expressed included coverage for illnesses (beyond radiation-related diseases) while traveling outside of the Marshall Islands, a need for specialist visits, a need for thyroid ultrasounds, and transportation to the DOE/PHRI clinics.

The Ebeye community meeting in October 1999 was well attended and, like Majuro, another community meeting was held in December to vote for the Community Advisory Group representatives. The concerns of this group centered on wanting healthier box lunches, which we are now providing; wanting to get priority to board the boat to Kwajalein for clinic visits like the workers do; and wanting better transportation from the boat to the clinic (a van versus a truck).

On Mejjatto there was a community meeting in October 1999 and January 2000. Both were well attended and the people voiced the same concerns as mentioned above in the Ebeye meeting. The patient population on Mejjatto voted for their Community Advisory Group representative in January.

The community meeting on Utrik took place in November 1999 and the patient population voted for their Community Advisory Group representatives in April 2000.

Besides conducting community meetings with the patient population, over the past year the program administration has had discussions with the following people to discuss various issues that will or could impact the program's ability to deliver medical care (in alphabetical order):

- Sandy Alfred, Hospital Administrator (Majuro Hospital)
- Sam Bellu (Businessman)
- Dr. Kenner Briand, Medical Director for Preventative Services (Majuro Hospital)
- Donald Capelle, Secretary for Primary Health Care (MOHE - Majuro)
- Minister Tony DeBrum (Finance)
- Dr. Jill Horner, Family Practice (Kwajalein Hospital)
- Al Hutchinson, CFO, 177 HCP (Majuro)
- Minister Alvin Jacklick (Minister of Foreign Affairs)
- Giff Johnson, Editor/Director of Publications (Marshall Islands Journal)
- Iroj Michael Kabua (Rongelap)

- Dr. Masao Korean, Chief of Staff (Majuro Hospital)
- Justina Langidrik (Assistant Secretary for Primary Health Care, Ministry of Health and Environment)
- Dr. Eric Lindborg, Family Practice (Kwajalein Hospital)
- Senator Abacca Anjain Maddison (Rongelap Atoll Local Government)
- Secretary Marie Maddison (Secretary of Foreign Affairs)
- Mayor James Matayoshi (Rongelap)
- Philip Muller (Previous Minister of Foreign Affairs)
- Robert Muller, Project Manager (ADB Ebeye Health and Infrastructure Project)
- Irene Paul (Assistant Secretary for Primary Health Care--Ebeye)
- Ambassador Joan Plaisted (U.S. Embassy--Majuro)
- Johnsay Riklon (Previous Rongelap Senator)
- Mayor Joe Saul (Utrik)
- Dr. Tin Soe, Medical Director--Primary Health Care Services (Ebeye Hospital)
- Tina Stege (Foreign Affairs Officer)
- Senator Hiroshi Yamamura (Utrik)

A few of the issues that arose from these discussions are: (1) The need for coverage for illnesses while in Hawaii and the mainland beyond radiation-related diseases; (2) Better transportation to and from the clinics; (3) The need to keep communication lines open between the DOE patient population, their leaders, and the DOE/PHRI Special Medical Care Program; (4) Minimum requirements regarding the possible move of the DOE/PHRI Clinic from Kwajalein to Ebeye once the new hospital on Ebeye is complete; and (5) How the residents can provide some assistance to Ebeye and Majuro Hospitals.

XI. Medical Records

One of the fundamental goals of the program is to provide innovative healthcare to the mandated population to improve health status. One means for reaching this goal is the introduction of an EMR system that allows for real time access to medical information by practitioners in the Marshall Islands and in Hawaii. Real time access means that decisions can be made with the latest data. While the most current data is important, past medical information is also needed to make accurate decisions and to provide continuity of care with regards to a patient's medical condition. It is for this reason that the program has begun to investigate ways of incorporating the archival records with the current medical record.

Furthermore, security is of primary importance when dealing with medical records and medical data. This is the result not only of statutory and regulatory requirements (both Federal and Hawaii State law), but also because of the need for sound program administration. Security protocols create auditable record keeping and management practices, which, in turn, create an organized management system. Security measures are necessary in all facets of the program and apply to physical as well as electronic activities.

1. Electronic Medical Records (EMR)

Dr. Johnson and Mr. Welsh have been busy looking at different software packages based upon the ease of entry, flexibility in terms of adapting it to the programs' needs security, ability to capture and provide data, telemedicine capability, hardware requirements, software support, initial and operational costs, etc.

While a final selection has not been made, the vendors have been narrowed down to two possibilities. We want to assure that the selection is feasible in terms of the Marshal Islands staff who will be entering the data directly onto the computer and plan on reviewing the two prototypes with the medical officers at the end of July. After review by the MO's, the RMI Program staff and administrators will perform a final evaluation and develop time lines for procurement, installation, testing, and training.

2. Past Records

Another challenge is related to the current as well as the archival medical records. The paper record, at some point, will need to be converted and inputted into the equivalent electronic form. With regards to the archived medical records from the past program, Dr. Johnson and Mr. Welsh have been working to develop a means to capture the past records onto a computer file that can be used to provide better continuity of care for the patient population.

A number of methods have been considered for extracting the data from the files. The more manual and intensive method would involve printing out all of the medical records, highlighting desirable information, and then keying in the information into a database. A second more automated approach for extracting the data would involve the use of annotations in Adobe Acrobat and the ability to read the annotations into a database programmatically. A third, and preferred method, would be the embedding of the acrobat reader into a database form so that data can be transcribed straight from the pdf file into the corresponding database.

Incorporating the past records with the program's current records would allow for a retrospective (1954- 1998) as well as a prospective (1998+) view of patient data for clinical purposes. Mr. Welsh has been developing the technical aspects of this proposal, which would require four full-time clerical persons for data capture, plus additional time for Dr. Johnson, Mr. Welsh, and Karen Marshall (program assistant) to develop, train, and oversee the operation. The priority would be to develop a system for the transcription of data. As the system is under development, personnel for the transcription process would need to be hired, computer equipment procured, quality control standards formalized, and a training regimen created.

3. Security Considerations

The State of Hawaii has enacted a new Hawaii Privacy of Healthcare Information Act (effective

July 1, 2000). In order to develop a security plan of action that effectively covers such responsibilities, and all other potential alternative scenarios, a well developed understanding of the regulations is necessary, as well as the general means of conformance being considered by the larger general medical establishment. We are in the process of developing the necessary policies and procedures for the EMR system. And, in doing so, we will emphasize the exercise of due

diligence in protecting patient confidentiality; i.e., using a security card system with passwords, using a dedicated server for medical records, etc.

The outline of the security management policy and plan (SMPP) is currently being written. Prior to establishing a security regime for the program, an analysis will be performed that identifies the main processes in the program and reviews each of the processes for potential security flaws. From this basis a meaningful SMPP can be created and put in place.

XII. Telehealth

Telehealth, often defined as a means for providing health services to persons that are geographically isolated from care facilities or medical/health specialists, capitalizes on the efficiencies available from relatively inexpensive communications technology. In the case of the program, this type of care can provide access to facilities and knowledge in Hawaii and beyond that are not generally available in the RMI. One such avenue that the program has chosen to concentrate its efforts in is the development of a **website**. The **website** will provide medical information to program staff as needed and provide interested parties and the general public with information regarding the program.

The public **website**, envisioned to be a tool available to anyone who may be interested in the program, will display nonsensitive information; i.e., such as the program's description, location information, organizational structure, etc. A draft **website** has been designed and is currently published at the domain name www.phri-doe.org. This site provides a cursory overview of the project.

Furthermore, in order to meet the needs of providing timely medical and specific program operations related information to individuals in Hawaii, as well as in the RMI, a secure **website** is under development.

The secure site, which is currently under development, will consist of the following types of information:

- Policies and procedures manual;
- Contact information;
- Medication formulary;
- Program forms;

- Faculty/resident instructions;
- Rotation schedules; and
- Useful medical links.

XIII. Agreements

During the year, the program coordinator worked on various subcontracts and agreements. The modification to the subcontract with Kaiser Permanente for Dr. Alik's time and effort on the project for this year was completed. The subcontract with Wahiawa General was modified to include conducting annual examinations at The Physicians' Center in Mililani for the DOE patient population residing in Hawaii. Having the annual examinations completed at The Physicians' Center provides these patients with better continuity of care since the same residents and faculty who rotate to RMI would be able to provide the services to these patients, as well as those who reside in RMI. Also, The Physicians' Center has both residents and faculty who speak Marshallese. Both the subcontract with Johns Hopkins University for the household nutrition intervention program and the University of Hawaii subcontract were finalized and approved.

XIV. Quality Assurance

As medical programs become more concerned about quality assurance, there is increasing interest in the patient's perspective of the care they experience. One of the ways of capturing patient perceptions of the care they have received is through satisfaction surveys. The current survey, which was translated into Marshallese, relates to the medical care provided by the DOE/PHRI Special Medical Care Program and what patients would like to see in the program (see exhibit 12).

The implementation of the provider audit, which looks at the medical records by provider and assesses the completeness, accuracy, appropriateness, was begun during the last quarter of this year. The Quality Assurance (QA) team, consisting of a quality assurance nurse from Wahiawa General Hospital and a faculty physician from the UH Family Practice Residency Program, has reviewed approximately 100 medical records to date. They are scheduled to complete the review of all of the program's patients' medical records by the end of July. A final report on their findings should be available by the beginning of September, at which point the program administration will discuss the necessary actions to be taken in order to comply with the QA team's recommendations. It is anticipated that there will need to be some modifications to the forms and the medical record procedures.

XV. Future Plans

We will continue to have two clinics in RMI; however, there is a possibility of the Kwajalein Clinic moving to Ebeye once the new Ebeye Hospital is finished. This will be a challenge for next year. A number of issues described above will need to be resolved before the move takes place, and discussions among the DOE/PHRI administrative staff, Ebeye Hospital, the MOHE, and DOE will be ongoing.

We are also exploring the possibility of doing thyroid ultrasounds in conjunction with the

Pacific E-Health Innovation Center at Tripler Army Medical Center. This would involve purchasing a portable ultrasound machine for the Majuro Clinic and training of the MO to conduct thyroid ultrasounds. Images would be transmitted digitally and read by Tripler. The feasibility of doing this is being examined. This would reduce the number of patients that would have to go to Kwajalein for procedures. Other procedures will continue as currently offered.

Consultants will be sent to complement ongoing medical care, as needed, based on clinic findings. Dr. Kryston will be making an annual visit to RMI to do a quality assessment in thyroid and diabetes care with the medical staff, as well as update them on advances in diagnosis and care in those areas.

As described above, implementation of the EMR system will be a major push next year, as well as the finalization of the program's website.

The program hopes to begin nutrition consultations via the Internet and will explore other types of possibilities as opportunities arise and as security allows.

XVI. Acknowledgments

The program would not have been possible without the enormous amount of time, effort, support, cooperation, and patience of so many individuals and organizations. Their efforts were above and beyond the call of duty. We would like to especially thank RMI Government officials and community leaders; U.S. DOE; physicians and staff from UHJABSOM DFPRP, Wahiawa General Hospital, Straub Clinic & Hospital, Inc., Kaiser Permanente, Ebeye Hospital and Majuro Hospital; Bechtel Nevada; Dr. Carucci; Ms. Maifeld; Johns Hopkins University; and the tireless efforts of the program's medical officers and nurse coordinators. Most importantly, we would like to thank the patients who have voluntarily come to the clinics to be seen. We must all remember that it is for them and because of them that the program exists.